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DEPARTMENT
OF
INDUSTRIES AND LABOUR

QUARTERLY BULLETIN

ELECTRICAL INSPECTION BRANCH

JANUARY 1955

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ADMINISTRATION BUILDING
EDMONTON

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MINISTER

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POSTAGE ON MAIL TO PERMIT OFFICE

Very frequently permit applications are received in the Edmonton Office contained in envelopes with insufficient postage. The amount of postage due has varied from 2 cents to 14 cents and over a period of a few months becomes a very considerable sum. Contractors are requested to check their mail carefully in this regard since, if it is noted that this oversight is made repeatedly by any one firm or individual, they will be billed for the accumulated postage.

RETURN ADDRESS ON MAIL TO PERMIT OFFICE

Please note that it is most important to indicate your correct return address on all mail. This is particularly important on permit applications since considerable delay may result in receipt of the approved permits if the correct return address is not given.

REQUESTS FOR INSPECTION

We wish to emphasize very strongly the necessity of notifying your District Inspection Office upon completion of an installation so that arrangements may be made to inspect it as soon as possible.

Many difficulties arise, both for the Inspection Department and the contractor, if an installation is not inspected within a reasonable time after its completion. The Inspector may feel that the permit holder is responsible for any corrections found necessary but if a long period has elapsed since the job was finished it is very possible that additions or alterations have been made for which the original permit holder is not responsible.

Inspection trips are usually planned with a view to checking as many as possible of those installations which are known to be completed. If this procedure was not followed, a great deal of expense would be involved in visiting projects covered by permits only to find that in many cases insufficient progress had been made with the work to warrant an inspection trip.

RESTRICTED OR TEMPORARY CERTIFICATES OF PROFICIENCY

The holders of the above types of certificates are reminded that they are limited to installations not exceeding 200 amp. single phase or 100 amp. three phase. Permits applied for by persons holding this type of certificate will not be approved if the installations covered exceed the limitations specified.

MOVING OF BUILDINGS AND OPERATION OF EQUIPMENT ADJACENT TO POWER LINES

A new Regulation has been adopted under the Electrical Protection Act outlining the precautions which must be taken when moving buildings or operating equipment adjacent to power lines. This Regulation reads as follows:

1. No person shall move any building or equipment or operate any equipment adjacent to power lines unless a clearance of at least six feet can be maintained from the power line conductors.

2. Where the clearance specified cannot be maintained the person moving the building or equipment or operating the equipment shall notify the owner of the power lines and request such changes and assistance as may be necessary to prevent accidents and damage.

3. The owner of the power line shall on request supply such assistance as promptly as possible.

4. When the power line is constructed in accordance with the minimum requirements of these Regulations the person moving the building or equipment or operating the equipment will be responsible for any assistance required in maintaining adequate clearances.

RULE 16-012

Some confusion apparently exists with regard to interpretation of the above rule.

The latest Code revision deletes Part (2) of the rule so that it is now only necessary to consider whether a circuit may be Class 1 or Class 2.

Installation requirements for Class 1 circuits shall be complied with where the limitations imposed by Rule 16-006 are not in effect or where failure of the circuit would create an actual hazard to life or property as distinct from merely causing operational failure to the equipment.

GROUNDING CONDITIONS AND USE OF S. E. CABLE WITH A BARE NEUTRAL

Rule 6-022 of the Canadian Electrical Code allows the use of a bare neutral for service entrances where the supply system is grounded to a metallic water main and Rural Wiring Regulation No. 2 (b) 2 further allows its use where a ground resistance of 25 ohms or less is available. These rules prohibit the use of S. E. cable with a bare neutral where grounding conditions of 25 ohms or less are not available. In locations where poor grounding conditions prevail the ground resistance should be checked at the time of installation. If the above conditions cannot be met, the service neutral must be insulated. This will necessitate the use of conduit or E. M. T. if S. E. cable with an insulated neutral is not available. A rough check of the individual electrode can be made

with a 5 amp. fuse which will "blow" when connected between the "hot" wire and the ground wire if less than a 25 ohm resistance is obtained.

S. E. CABLE CONNECTORS

Equipment installed exposed to the weather is required to be of weatherproof construction. Instances have been found where S. E. cable connectors used at weatherproof metering devices and exposed to the weather have not been of the weatherproof type. Weatherproof S. E. cable connectors are rubber grommetted and this type is required where the connectors are exposed to the weather such as at "A" boxes, socket meter bases, and rural service switch and meter cabinets, unless the S. E. cable enters the enclosure from the bottom and a suitable drip loop is formed.

TYPE OF CONDUCTORS ACCEPTABLE FOR DIRECT EARTH BURIAL

Rule 12-008, Sixth Edition of the Canadian Electrical Code specifies TWU, RWU, lead covered or other acceptable type to be used for direct earth burial. As the only difference between the type TW and TWU or RW and RWU is 1/64 of an inch in the thickness of insulation, this Department is prepared to accept type TW and RW for direct earth burial when provided with acceptable protection from mechanical injury.

TIME-DELAY FUSES

The above type of fuse, also known as the dual element fuse, may often be used to advantage to provide for starting currents and short-circuit protection of motor circuits. They may be the means of making it possible to use a smaller size of motor switch than would be possible with the standard type of fuse.

The minimum acceptable rating for time-delay fuses must be based on 150% of the motor running current and the usual overload protection must be provided in addition to the fuses.

SERVICES OF BRANCH CIRCUIT BREAKERS

The Alberta revised Rule 6-040 requires that space be left in a circuit-breaker panel for two additional circuits when it is used as the service box.

Although it is not a requirement, it might be suggested that considerable time and expense might be saved in the future if the conductors for these two spare circuits could be run from the panel to some accessible point such as the basement at the time of the initial installation.

CURRENT TRANSFORMERS AND METERING ENCLOSURES INSTALLED ON CUSTOMER'S PROPERTY

The question of standardizing the size of enclosures required for these purposes has been under discussion for the last eight months. A meeting was held in the Calgary Power Limited Board Room on November 17th, 1954, which was attended by representatives of all major Utilities, distributing electrical power in the Province to determine if a standard could be agreed upon, which could be acceptable to all the Utilities concerned.

After considerable discussion it was agreed that enclosures for current transformers of the dimensions indicated below, together with the size of conduit for metering leads, would be acceptable to all of the Utilities as a minimum standard.

It was also agreed that cabinets 26" x 12" x 8 1/2" would be acceptable enclosures for meter test blocks and meters on 3 phase, 3 wire, and 3 phase, 4 wire installations where current transformers were supplied and a single meter installed.

For single phase energy or demand installations a current transformer cabinet will not be required for a service of 200 amp. or less where socket metering is available. For three phase, three-wire energy a current transformer cabinet will not be required for a service of 150 amps. or less where socket metering is available. For three phase, four-wire energy a current transformer cabinet will not be required for a service of 100 amps. or less where socket metering is available. With respect to the above it is to be noted that all of the utilities with the exception of the City of Red Deer and the Calgary Power Ltd. are in a position to accept the 200 ampere socket meter. The Calgary Power Ltd. are at present only able to accept this 200 ampere socket metering in a limited number of districts and inquiries should therefore be made from the District Supervisor before a provision of this type of metering is installed. Where socket metering is installed the Utility should be consulted to ensure that the style of socket is suitable for the type of service involved.

The provision of a separate cabinet for meter and test block makes it possible for these items to be placed in a different location than the service equipment and current transformer enclosures. In many instances the Utility Company will prefer to have the meter located outside of the building where it will be readily accessible for periodic reading. There may also be other reasons such as the space available, or the actual working conditions in the building, which make a separate location desirable. The location of the meter box should, therefore, be discussed with both the customer and the utility before the installation is made.

On single phase installations of 100 amperes or less, either a meter socket or an "A" box will be accepted as a meter enclosure. As indicated above, this will apply to all Utilities, with the exception of Calgary Power Ltd., where the meter socket is once again limited to certain districts.

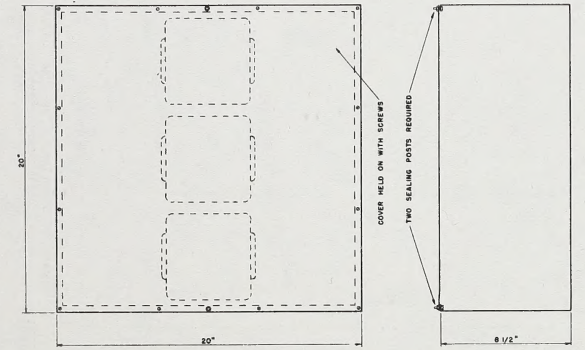
The enclosures listed herewith are to be constructed in accordance with the appropriate Canadian Standards Association's specification and the measurements indicated, and are to be inside measurements of the enclosure. The current transformer cabinets are to be provided with covers attached by screws and facilities for sealing. The meter enclosures are to be provided with hinged doors without facilities for locking. Knockouts for conduit are not to be supplied as contractors indicate they prefer to cut the outlets with the special tools available for this purpose.

SERVICE SWITCH OR BREAKER	SIZE CT ENCLOSURES	METER BOX	METERING LEAD CONDUIT
SINGLE PHASE ENERGY OR DEMAND ENERGY			
Up to 100 amps.	NIL	Meter trim sw. Socket or A Box	
100 to 200 "	200 amp. socket or 20" x 20" x 8 1/2"	Socket or A Box	3/4"
200 to 400 "	20" x 20" x 8 1/2"	Socket or A Box	3/4"
400 to 600 "	24" x 24" x 8 1/2"	Socket or A Box	3/4"
THREE PHASE THREE-WIRE ENERGY			
Up to 100 amps.	NIL	Meter trim sw. or Socket	
100 to 150 "	200 amp. socket or 20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1"
150 to 400 "	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1"
400 to 600 "	24" x 24" x 8 1/2"	26" x 12" x 8 1/2"	1"
THREE PHASE FOUR-WIRE ENERGY			
Up to 100 amps.	200 amp. socket or 20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
100 to 225 "	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
225 to 400 "	24" x 24" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
400 to 600 "	PANEL		1 1/4"
THREE PHASE THREE-WIRE DEMAND ENERGY			
Up to 100 amps.	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1"
100 to 150 "	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1"
150 to 400 "	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1"
400 to 600 "	24" x 24" x 8 1/2"	26" x 12" x 8 1/2"	1"
THREE PHASE FOUR-WIRE DEMAND ENERGY			
Up to 100 amps.	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
100 to 200 "	20" x 20" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
200 to 400 "	24" x 24" x 8 1/2"	26" x 12" x 8 1/2"	1 1/4"
400 to 600 "	PANEL		1 1/4"

TYPICAL CURRENT TRANSFORMER ENCLOSURE

DIAGRAM 1

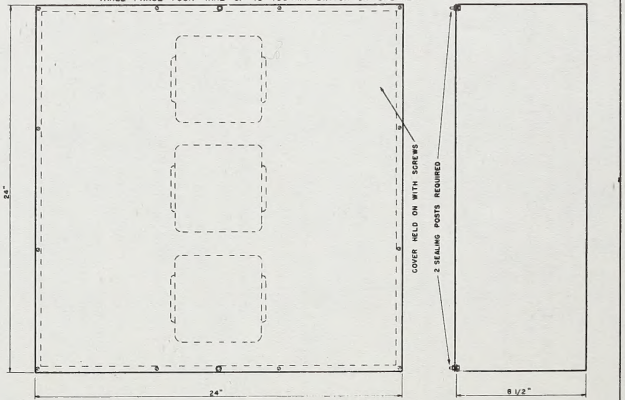
THREE PHASE THREE WIRE UP TO 400 AMP SWITCH OR BREAKER
SINGLE PHASE THREE WIRE UP TO 400 AMP SWITCH OR BREAKER
THREE PHASE FOUR WIRE UP TO 225 AMP SWITCH OR BREAKER



TYPICAL CURRENT TRANSFORMER ENCLOSURE

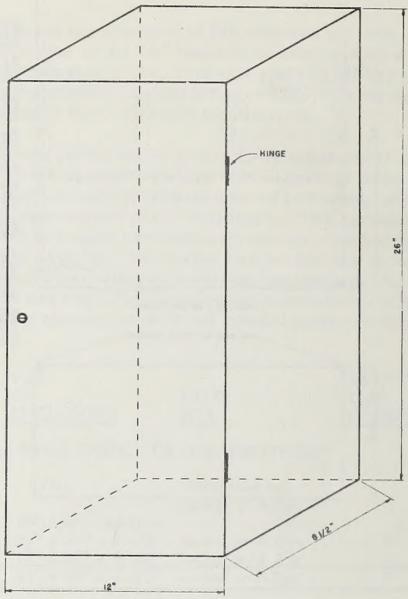
DIAGRAM 2

THREE PHASE THREE WIRE UP TO 600 AMP SWITCH OR BREAKER
SINGLE PHASE THREE WIRE UP TO 600 AMP SWITCH OR BREAKER
THREE PHASE FOUR WIRE UP TO 400 AMP SWITCH OR BREAKER



METER AND TEST BLOCK BOX DIAGRAM 3

DOOR OPENING MUST BE 12" X 26", VERTICALLY HINGED



SOLDERLESS CONNECTORS

All approved types of the above connectors may be used on circuits with voltages up to 300 and some types may be used on circuits up to 600 volts.

It should be noted that Rule 12-020 of the 6th Edition of the Code does not restrict the use of approved solderless connectors to any particular portion of the installation. On installations up to 300 volts, therefore, any approved connectors may be used for splicing wherever desired, subject to other applicable Code rules. If the voltage on a circuit exceeds 300, it is necessary to determine that the particular connectors used are of a type approved for use with the voltages encountered.

STAPLES FOR SUPPORT OF NON-METALLIC SHEATHED CABLE

Note that Rule 12-092 of the 6th Edition of the Code allows the use of approved devices, other than straps, for support of non-metallic sheathed cable.

Staples are now available which have been approved by Canadian Standards Association for this purpose. The approved types are provided with means to prevent them from being driven in far enough to damage the cable.